

first and second are so important that the less time that is lost in starting such an institution the better; and we are glad to learn that towards its foundation the Duke of Westminster has promised 500*l.*, Mr. C. Waring 100*l.*, and Mr. Cubitt 100*l.*

The most important speech, perhaps, was that made by the Duke of Westminster, in moving the adoption of the Report. He pointed out that we are face to face with a very gigantic evil—an evil not only gigantic in itself, but, considering the enormous yearly increase of 40,000 in the population, one of a very alarming character. Therefore it was necessary that some steps should be taken to abate, if not to entirely do away with, that monstrous evil, which affected the health and vitality of the inhabitants of the metropolis. They were all aware of the evil effects of smoke, and how far worse it became when mixed with fog, but they believed that it was an evil which might be considerably modified if not entirely prevented. They had indisputable authority for saying that smoke was very wasteful and destructive. The waste in London alone amounted to one million yearly, and the waste in the country must be taken in proportion to that in the metropolis. They had also the highest authority for informing the public that the evil affected the health of those who lived under the canopy of smoke. Its effect on public buildings was also most destructive, and Mr. Shaw-Lefevre had said that to repair the damage done by its agency to the Houses of Parliament alone involved an expenditure of 2500*l.* per annum, and there could be no greater curse and bane to the metropolis than that smoke nuisance. The object of the meeting was to impress upon the public the importance of the subject. The Smoke Nuisance Act had been useful in the past, and could be made more efficacious in the future if its provisions were more strenuously enforced. Quoting from the correspondence which had taken place between the Home Office and the Association upon the subject, the speaker said that the Home Secretary had stated that in the majority of cases the fines inflicted were far less in amount than had been contemplated by the Act. That was not a right state of things, and efforts should be made to remedy it as soon as possible; and it was not unreasonable to suppose that with a proper enforcement of the law a check to a certain extent might be put upon the nuisance. After some other observations, his Grace concluded by moving the adoption of the Report.

Sir Spencer Wells and Sir Frederick Abel spoke in favour of the Duke of Westminster's proposal, which was carried unanimously.

The next resolution was moved by the Duke of Northumberland, and was to the following effect:—"That the period has now arrived at which systematic inquiry is desirable into the application of the resources of technical science for the abatement of smoke now largely produced in industrial processes and in the heating of houses, as well as into the operation of the existing laws for smoke abatement; and that the Council of the National Smoke Abatement Institution be requested to urge upon the Government the desirability of appointing a Royal Commission for the purpose."

This was seconded by Sir Wm. Siemens and carried.

We are glad to see that it was acknowledged that the stated objects of the Smoke Abatement Institution, and the success which has attended its past efforts, had established a claim not only to the support of the meeting, but to that of the City of London and other great cities and towns.

We must congratulate the Council of the new institution upon the energy which they are displaying, and we believe that in a few years the success they will then have met with will lead one to hope that in process of time the smoke nuisance which kills its tens of thousands annually, and makes life in a great city like London almost unbearable, will to a certain extent be done away with.

NOTES

GREAT efforts are being made by the Council of the Society of Arts and its chairman, Sir William Siemens, who has again been elected to this office, to make their *conversazione*, to be held on the 25th inst. at the Fisheries Exhibition, a great success. The fountains are to be illuminated by coloured fires, and the gardens, as well as the Exhibition Buildings, will be lighted by the electric light. The band of the 6th Thuringian Regiment of German Infantry will perform in the building.

A MEETING which may have an important result upon science and art instruction in this country has been inaugurated at Manchester. An association has been established to effect the general advancement of the profession of science and art teaching by securing improvements in the schemes of study and the establishment of satisfactory relations between teachers and the Science and Art Department, the City and Guilds of London Institute, and other public authorities. It proposes also to collect such information as may be of service to teachers professionally, and it will endeavour by constant watchfulness to advance the status and material interests of science and art teachers in all directions. The president of the new Association is Prof. Huxley, and the vice-presidents are Dr. H. E. Roscoe, Mr. Norman Lockyer, Prof. Boyd Dawkins, Prof. Gamgee, Mr. Ayrton, Prof. Silvanus Thompson, Dr. John Watts, Mr. S. Leigh-Gregson, Mr. John Angell, Mr. W. Lockett Agnew, Mr. C. M. Foden, and Mr. J. H. Reynolds. Mr. W. E. Crowther, of the Technical School and Mechanics Institution, Manchester, is the Honorary Secretary, and all communications should be addressed to him, especially by those who are desirous of forming affiliated unions in other districts. We believe that branches are already being established at Newcastle-upon-Tyne and Liver pool.

DR. J. H. GILBERT, F.R.S., has been elected a Corresponding Member of the Institute of France (Academy of Sciences).

THE treasurer of the Darwin Memorial Fund has received through Dr. Elförs of Helsingfors a cheque for 94*l.* 4*s.*, that being the amount collected in Finland as a contribution to the memorial. That so large an amount should have been collected in so small a country is only an additional proof of the ready recognition which the great works of Darwin have received in other countries as well as our own. The fund now amounts to 3300*l.*

THE Lick Observatory, we learn from *Science*, has made much progress during the past year. The dome for the small equatorial has now been finished, and is certainly the most complete and convenient one of its size in America. The building of the observatory in which the great thirty-six-inch equatorial is to be placed is also progressing. The walls of the main building are half completed, and the cellar for the dome has been excavated. The four-inch transit-house and the buildings for the photo-heliographs have been in working order now for some time, as they were used in a successful observation of the transit of Venus last December. In a few weeks the building for the meridian circle will be commenced, as well as a house for the astronomers and buildings to contain the appliances for moving the dome, and for the general heating and lighting of the observatory. Two brick reservoirs for spring water, the one containing 83,000 gallons, the other 20,000 gallons, have been constructed, and another reservoir to contain 83,000 gallons of rain-water will shortly be commenced. The roads have been extended. Some of the original arrangements of the observatory buildings, which were only provisional, have now been replaced by more substantial and permanent structures, and by the end of the season great progress will have been made.

Science announces the death last month of Stephen Alexander, Professor Emeritus of Astronomy at Princetown. He was educated at Union College, where he graduated in 1824. In 1840 he was appointed Professor of Astronomy at Princetown, and more recently he received a Professorship of Mechanics. It was as an astronomer, however, that he was most generally known.

WE have been asked by the local secretaries of the Meeting of the British Association for the Advancement of Science to be held at Southport in September next to call the attention of those who have in their possession scientific instruments, curiosities, and other objects of special or artistic interest, to the fact that there will be an exhibition of such articles in connection with the meeting of the Association. Intending exhibitors and others interested in this matter should communicate with Mr. Ch. de Wechmar Stoess, the Hon. Sec. *Conversazione* Committee, and Mr. Alfred Morgan, the Hon. Sec. for Exhibits, immediately.

THE steamer *Pola* has just called at Reikjavik, in Iceland, on her way to Jan Mayen, to bring away the Austrian observation party wintering there. Towards the end of the present month the Swedish gunboat *Urd* will proceed to Spitzbergen to relieve the Swedish party wintering there. It is reported, both from Iceland and Norway, that the state of the ice in the Arctic seas is very favourable to navigation.

THE *Sophia*, Baron Nordenskjöld's vessel, left Rödeffjord, Iceland, for Ivigtuk, in Greenland, on June 10, leaving Count Strömfelt and Drs. Arpi and Flink behind to pursue geological and botanical researches there.

A LETTER from M. Thouard, the well known French traveller, dated Santiago (Chili), states that he heard from Chiriguano Indians that a part of the Crevaux party were still prisoners of the Tobas tribe. M. Thouard will try to assist his countrymen.

MR. CROOKES and Professors Odling and Tidy have lately given in their Report on the composition and quality of London water during 1882 to the Local Government Board. In that year they examine 12110 samples of water drawn in nearly equal proportions from the mains of all the seven London Companies; testing generally seven samples daily by their colour according to the registers of the colour-meter, by the quantity of free oxygen and ammonia contained in them, by the amount of oxygen required for oxidation of the organic matter present in them, by their proportions of organic carbon and nitrogen, of nitrates and chlorine, and by their initial hardness in degrees of Clark's scale. The results exhaustively set forth in numerical tables are further illustrated by seven diagrams, in each of which three wave-lines represent the fluctuations throughout the year of discoloration, of the proportion of organic carbon, and of the amount of oxygen required to oxidise the organic matter of the water of the London Company in question. These diagrams show to the eye what the statistics confirm, the remarkable parallelism existing between the degree of discoloration, the amount of organic carbon present in the water as determined by combustion, and the amount of oxygen requisite to oxidation of the organic matter as determined by permanganate. The Report altogether would seem to reflect most favourably on the quality of London water. Throughout the whole year the water of the New River Company as determined by the samples was, without exception, "clear, bright, and well filtered," a character supported by analyses of other kinds, and in only a few cases in the samples of the other Companies was the water describable as "turbid," "slightly turbid," or "very slightly turbid." For the nine months from February to October 1882 the organic matter in the water of all the London Companies is estimated at 137 per 100,000, and the highest monthly mean for the same period at 181 per 100,000. There is, however, one important factor in the question with which

chemical analysis cannot directly cope, the comparative innocuousness, namely, of the organic matter present in the water according as it is of vegetable origin, or its comparative virulence according as it is of animal origin. As Prof. Huxley, in a lecture in 1880 to the Chemical Society, said, water as regards chemical analysis may be perfectly unobjectionable, and yet as regards its operation on the human body deadly as prussic acid.

WE have received advanced copies of the following books from the Literary Superintendent of the Fisheries Exhibition:—"British Marine and Freshwater Fishes," by W. Saville Kent, F.L.S., F.Z.S.; "Zoology and Food Fishes," by George Bond Howes, Demonstrator of Biology at the Normal School of Science; "On the Capture of Salmonidæ and the Acclimatisation of Fish," by Sir James Ramsay Gibson Maitland, Bart.; and "The Fishery Laws," by Frederick Pollock. We must congratulate the Commissioners of the International Fisheries Exhibition on their activity, and on their care for the scientific aspect of the specimens in their collection. There are two kinds of books published by the Exhibition authorities. Reports of papers read at the conferences and the important discussions which have followed their reading are published, and other books are written in explanation of the exhibits and other subjects bearing upon fish and fish culture.

THERE is an interesting article on "The Import Duty on Scientific Journals" in *Science* for June 29. The writer ventures to suggest that at its next meeting, the American Association for the Advancement of Science should appoint a committee to draw up a definite list of those foreign technical journals of mathematics, physics, chemistry, mineralogy, geology, geography, botany, zoology, physiology, and ethnology which do not compete with similar enterprises of publishing firms in the United States, and urge Congress to pass a special Act putting these journals on the free list. The article goes on to say that, if a suitable Bill were drawn up, there is little doubt that some member of Congress could be found to introduce it, and if framed so that it touched no publisher's pocket, and vigorously supported by the scientific influence of the country, it would certainly become law.

THE earthquake at Voss in Norway on June 13, reported in *NATURE* last week (p. 233), was felt over the entire district between Bergen and Aalesund, but most severely in the well-known Dalsfjord. A further shock was felt over the same district on June 15 at 1.50 p.m., and some people assert that another followed at about 11 a.m. on the following day.

ON the evening of the 2nd inst. a terrific cyclone passed over Stockholm. Its course was north-west to north-east. Houses were unroofed, trees uprooted, and a number of people thrown down, while not a shred of canvas was left on the masts of the vessels in the harbour. Barely a mile from the track of the cyclone there was almost a perfect calm.

WE learn that the Dutch Government have decided not to grant the sum of 30,000 guilders which Baron Nordenskjöld claims as the discoverer of the North-East Passage. The decision is founded on the motive which led the States General in 1596 to offer this award, viz. to find a passage of commercial value to the nation; Baron Nordenskjöld having, however, discovered what may be termed a purely scientific one, the award, it is argued, has not been earned. As several reasons have been advanced for this claim made by the gallant Swedish explorer, we do not think we err when we assert that it was his intention to have expended the sum in the interest of science, viz. on an expedition to the Arctic regions.

A STATE paper recently issued by the Minister of Public Works in France contains some interesting details on the French

mineral waters. There are 1027 sources which are worked. Of these 319 are sulphurous, 357 alkaline, 136 iron, and 215 salt; 386 are cold, that is to say, they do not exceed 15° C. in temperature, and 641 are thermal. They are distributed as follows:—Puy-de-Dôme, 94; Ardèche, 77; Vosges, 76; Ariège et Pyrénées Orientales, 69; Hautes-Pyrénées, 64. The paper also states the number of visitors to these different waters. It appears that the Hautes-Pyrénées are the most frequented. During the past year this department alone has had 44,476 visitors, thus distributed:—Puy-de-Dôme, 18,619; l'Alliers, 16,430; la Haute-Garonne, 14,230; les Landes, 12,954. The water flowing from all the 1027 sources is estimated at 46,412 litres per minute.

THE Chevalier Frédéric Franchetti, engineer at Leghorn, has referred M. de Parville to a curious passage in Galileo's "Dialogues" touching a possible early origin of the electric telegraph. In the dialogue Sagrado says that he calls to mind a man who wanted to tell him a secret which would give him the power by means of a certain sympathy of magnetised wires to speak to any one two or three thousand miles off. The bargain however fell through, as the inventor would not try any shorter distance, and Sagrado declined to go to Cairo or Muscovy to try the experiment. The story is told in the last number of the *Revue Scientifique*. The reference given is p. 97 of the first day, Leghorn Edition, 1874.

THE Executive Committee of the International Fisheries Exhibition has published a penny plan and tour as a complete guide to the leading and most interesting features of the Exhibition, which we think will prove useful.

WE have some very interesting figures before us comparing the different modes of illumination in respect to the amount of products of combustion:—

Light of 100 candles.	Products per hour.		
	Water vapour, kilos.	Carbonic acid in cubic metres.	Heat in calories.
Electric lamp, arc	0	0	57-158
„ „ incandescent	0	0	290-536
Gas, Argand burner	0.86	0.46	4860
Lamp, petroleum, flat flame... ..	0.80	0.95	7200
„ colza oil	0.85	1.00	6800
Candle, paraffin	0.99	1.22	9200
„ tallow	1.05	1.45	9700

These we think are quite sufficient to show the great supremacy of electric lighting over all other methods of illumination when considered as a matter of health.

WE learn from *Nature* that a hitherto unknown form of the potato disease, which had been making slow but steady progress near Stavanger during the last ten or twelve years, has recently begun to show increased energy. The stalk of the plant is the part affected, and here Herr Anda has discovered small white fungoid growths, which after a time assume a greenish, and finally a black, colour, after attaining the size of a small bean. While the fungus is rapidly increasing at the expense of the plant, the interior of the stem is first reduced to a pulpy condition, and next shrivelled and hollowed out, until nothing remains but a mere outer shell, which breaks down on being touched. When the ripe black germs of the fungus have remained in the earth through the winter, they are found after the return of the next year's warmth to have developed small stalked fruits filled with minute spores, which penetrate into the young plants before they appear above the ground. The end of July or beginning of August is the time when the ravages of the fungus are most conspicuous, and at those periods whole fields of potato plants are often rapidly reduced to the condition of withered straw.

WE have received from the Minister of Mines of New South Wales the report of the Chief Inspector of Mines for the year

1882. Besides the usual statistics, a great part of the report is occupied with suggestions for the improvement of the present law of the colony for preventing accidents to workmen in mines.

FROM a comparison between the lists of birds observed at Salt-dalen in Norway by the ornithologist Sommerfeldt, from 1805 to 1825, and those which are now found in the district, it would appear, according to Herr Hageman of the Norwegian Forest Department, that the smaller singing birds are much more largely represented now than formerly. The ortolan and crossbill, *Hirundo urbica* and *rustica*, the common sparrow and the chaffinch, which are now abundant, were then unknown in the district, while the common sparrow was only observed on one occasion by Sommerfeldt. Herr Anda ascribes the present increase in numbers and species to the better cultivation of the land and the clearing of the fir-woods.

THE additions to the Zoological Society's Gardens during the past week include a Kinkajou (*Cerculeptes caudivolvulus*) from South America, presented by Mr. H. V. Brackenbury; a Syrian Fennec (*Canis famelicus* ♀) from North Africa, presented by Mr. J. H. James; a Blau-bok (*Cephalophus pygmaeus* ♀) from South Africa, presented by Mr. Ernest Honey; a Slender-billed Cockatoo (*Licmetis tenuirostris*) from Australia, presented by Mrs. A. C. Biddle; an Earl's Weka Rail (*Ocydromus carlii*) from North Island, New Zealand, presented by Mrs. Wilson; two Wood Owls (*Syrnium aluco*), British, presented by Mr. J. Metcalfe; two Black Guillemots (*Uria grylle*) from Ireland, presented by Mr. H. Becher; a Vervet Monkey (*Cercopithecus lalandii* ♂) from South Africa, a Moor Macaque (*Macacus maurus* ♂), a Bonnet Monkey (*Macacus radiatus* ♀) from India, two Common Snakes (*Tropidonotus natrix*, var.), European, a Spotted Cavy (*Calogenys paca*), two Hairy-rumped Agoutis (*Dasyprocta prymnolopha*) from Guiana, deposited; a Black Howler (*Myctes caraye* ♂) from Brazil, purchased; a Japanese Deer (*Cervus sika* ♂), a Burrhel Wild Sheep (*Ovis burrhel* ♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE TOTAL SOLAR ECLIPSE OF AUGUST 28-29, 1886.—This great eclipse is a return of that of August 17-18, 1868, which was extensively observed in the Bombay and Madras Presidencies and in other parts of its track from Aden to Torres Straits. In 1886 the track of the central line is mainly over the Atlantic Ocean, and at that portion of it where the duration of totality is longest it will not be observable on land. It is therefore of interest to examine the possible conditions of observation. In deducing the results which follow, the places of the sun and moon have been taken from the *Nautical Almanac*, where Newcomb's corrections to Hansen's Lunar Tables are introduced. As will be seen from the Ephemeris, the central eclipse commences in longitude 79° 46' west of Greenwich, and latitude 9° 48' north, off Colon, in the isthmus of Panama, thence running in the direction of the Windward Islands across the northern parts of New Grenada and Venezuela; passing over the Island of Grenada, it traverses the Atlantic, and meets the coast of Africa in the Portuguese possessions, not far from St. Philip de Benguela, and crossing South Africa to Sofala, it ends on the east coast of Madagascar. At Cartagena the duration of totality is 3m. 2s., with the sun at an altitude of 5°; at Maracaybo the duration is 2m. 57s., with the sun 9° above the horizon. The southern extremity of the Island of Grenada will have the most advantageous conditions for observation, having regard to length of totality and accessibility. The total eclipse begins there at 7h. 11m. 0s. a.m. on August 29, and continues 3m. 42s., the sun being at an altitude of 20°; at the northern extremity of the island the length of total eclipse is about five seconds less. In Carriacou, the principal island in the Grenadines, the duration of totality is 3m. 21s.; at the northern point of Tobago it is 1m. 51s. On the Atlantic, where the sun is on the meridian at the middle of the eclipse, or in longitude 14° 27' west and latitude 2° 57' north,